

Downregulation of RhoGDI α increased migration and invasion of ER⁺ MCF7 and ER⁻ MDA-MB-231 breast cancer cells.

ABSTRACT

Rho Gdp dissociation inhibitors (RhoGDIs) can inhibit cell motility, invasion, and metastasis in cancer by inactivating the RhoGTPases. A member of RhoGDI family has been consistently shown to interact with estrogen receptor (eR), and change its transcriptional activity. eR is a receptor known to be inversely correlated with cell motility and invasion in breast cancer. The consequence of RhoGDI α activity on migration and invasion of eR⁺ and eR⁻ breast cancers is not clear. The aim of our study was to investigate the possible opposing effect of RhoGDI α on the migration and invasion of eR⁺ MCF7 and eR⁻ MDA-MB-231 breast cancer cells. RhoGDI α was downregulated using short interfering RNA (siRNA) and upregulated using GFP-tagged ORF clone of RhoGDI α , and their ability for migration and invasion was assayed using transwell chambers. It was found that the silencing of RhoGDI α in MCF7 and MDA-MB-231 cells significantly increased migration and invasion of these cells into the lower surface of porous membrane of the chambers. Overexpression of RhoGDI α in MCF7 cells suppressed their migration and invasion, but no significant effect was found on MDA-MB-231 cells. Our results indicate that the downregulation of RhoGDI α similarly affects the in vitro migration and invasion of eR⁺ MCF7 and eR⁻ MDA-MB-231 cells. however, our assays are differently affected by the upregulation of RhoGDI α in these two cell lines and this may be due to the differences in eR expression, primary invasive ability and/or other molecules between these two cell line models which warrant further investigation.

Keyword: Invasion; MCF7; MDA-MB-231; Migration; Transwell.